TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application No.	10/038,076
Filing Date	January 2, 2002
First Named Inventor	Allen D. Feller
Art Unit	1714
Examiner Name	Toomer, Cephia D.
Total Number of Pages in This Submission	22
Attorney Docket Number	42390P9433

ENCLOSURES *(check all that apply)*

- [X] Fee Transmittal Form
  - [X] Fee Attached
- [ ] Amendment / Response
  - [ ] After Final
  - [ ] Affidavits/declaration(s)
- [ ] Extension of Time Request
- [ ] Express Abandonment Request
- [ ] Information Disclosure Statement
  - [ ] PTO/SB/08
- [ ] Certified Copy of Priority Document(s)
- [ ] Response to Missing Parts/ Incomplete Application
  - [ ] Basic Filing Fee
  - [ ] Declaration/POA
  - [ ] Response to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Drawing(s)
- [ ] Licensing-related Papers
- [ ] Petition
- [ ] Petition to Convert a Provisional Application
- [ ] Power of Attorney, Revocation Change of Correspondence Address
- [ ] Terminal Disclaimer
- [ ] Request for Refund
- [ ] CD, Number of CD(s)
  - [ ] Landscape Table on CD
- [ ] After Allowance Communication to TC
- [ ] Appeal Communication to Board of Appeals and Interferences
- [X] Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
- [ ] Proprietary Information
- [ ] Status Letter
- [X] Other Enclosure(s) *(please identify below):*

-return receipt postcard

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	Angelo J. Gaz, Reg. No. 45,907 BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
Signature	
Date	July 17, 2006

CERTIFICATE OF MAILING/TRANSMISSION

I hereby certify that this correspondence is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop Appeal Brief-Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Typed or printed name	**Amber D. Saunders**		
Signature		Date	**July 17, 2006**

Based on PTO/SB/21 (09-04) as modified by Blakely, Sokoloff, Taylor & Zafman (wlr) 11/30/2005.
SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

FEE TRANSMITTAL for FY 2005

Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27.

TOTAL AMOUNT OF PAYMENT ($) 500.00

Complete if Known	
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METHOD OF PAYMENT *(check all that apply)*

☒ Check ☐ Credit card ☐ Money Order ☐ None ☐ Other (please identify): _____

☒ Deposit Account Deposit Account Number: 02-2666 Deposit Account Name: Blakely, Sokoloff, Taylor & Zafman LLP

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☐ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, except for the filing fee

☒ Charge any additional fee(s) or underpayment of fee(s) under 37 CFR §§ 1.16, 1.17, 1.18 and 1.20. ☒ Credit any overpayments

FEE CALCULATION

1. EXTRA CLAIM FEES

			Extra Claims		Fee from below		Fee Paid
Total Claims	16	- 20* =	0	x	50.00	=	$0.00
Independent Claims	3	- 3* =	0	x	200.00	=	$0.00
Multiple Dependent						=	

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
1202	50	2202	25	Claims in excess of 20
1201	200	2201	100	Independent claims in excess of 3
1203	360	2203	180	Multiple Dependent claim, if not paid
1204	790	2204	395	**Reissue independent claims over original patent
1205	300	2205	150	**Reissue claims in excess of 20 and over original patent

***or number previously paid, if greater, For Reissues, see below*

SUBTOTAL (1) ($) 0.00

2. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet.	
2053	130	2053	130	Non-English specification	
1251	120	2251	60	Extension for reply within first month	
1252	450	2252	225	Extension for reply within second month	
1253	1,020	2253	510	Extension for reply within third month	
1254	1,590	2254	795	Extension for reply within fourth month	
1255	2,160	2255	1,080	Extension for reply within fifth month	
1401	500	2401	250	Notice of Appeal	
1402	500	2402	250	Filing a brief in support of an appeal	500.00
1403	1,000	2403	500	Request for oral hearing	
1451	1,510	2451	1,510	Petition to institute a public use proceeding	
1460	130	2460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
1809	790	1809	395	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	790	2810	395	For each additional invention to be examined (37 CFR § 1.129(b))	
Other fee (specify)					

SUBTOTAL (2) ($) 500.00

SUBMITTED BY

Complete (if applicable)

Name (Print/Type)	Angelo J. Gaz	Registration No. (Attorney/Agent)	45,907	Telephone	(310) 207-3800
Signature				Date	07/17/06

Based on PTO/SB/17 (12-04) as modified by Blakely, Sokoloff, Taylor & Zafman (wlr) 12/15/2004.
SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

PATENT
Attorney's Docket No. 042390.P9433

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application for:	Examiner: Toomer, Cephia D.
Allen D. Feller, et al.	Art Unit: 1714
Serial No.: 10/038,076	Confirmation No.: 7335
Filed: January 2, 2002	
For: **METHOD FOR IMPROVING CHEMICAL MECHANICAL POLISH ENDPOINT SIGNALS BY USE OF CHEMICAL ADDITIVES**	

APPEAL BRIEF

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Applicant (hereinafter "Appellant") submits one copy of the following Appeal Brief pursuant to 37 C.F.R. § 1.192 for consideration by the Board of Patent Appeals and Interferences. Attached please find a check for $500.00 to cover the cost of filing the opening brief as required by 37 C.F.R. § 41.20(b)(2). Please charge any additional amount due or credit any overpayment to deposit Account No. 02-2666.

07/25/2006 MWOLDGE1 00000039 10038076
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TABLE OF CONTENTS

I. REAL PARTY IN INTEREST

Allen D. Feller and Kenneth C. Cadien, the parties named in the caption, transferred their rights to that which is disclosed in the subject application "Method of Improving Chemical Mechanical Polish Endpoint Signals by Use of Chemical Additives" to Intel Corporation of Santa Clara, California. Thus, as the owner at the time the brief is being filed, Intel Corporation of Santa Clara, California is the real party in interest.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences that will directly affect or be directly affected by or have a bearing on the Board's decision in this Appeal.

III. STATUS OF CLAIMS

Claims 1-8 and 10-17 are pending and rejected in this application. Claim 9 has been cancelled and forms no part of this appeal. Claims 1-8 and 10-17 are appealed herein.

IV. STATUS OF AMENDMENTS

No amendments have been filed subsequent to the Final Office Action.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Three independent claims (claims 1, 4 and 12) and two dependent claims (claims 3 and 16) are presented in this appeal.

Independent claim 1 describes a method comprising:

removing a material from a surface of a wafer by chemical mechanical polishing the wafer with a slurry comprising oxidation agent for the material and a buffer; and (see Appellants' specification features 308, 310, 114 and 116, figures 3-4, paragraphs 6-9;

block 710, figure 7, and paragraph 35, which when summarized, without limitation thereto, describe, for example, removing excess tungsten 310 and adhesion layer 308 such that via 110 is flush with ILD layer 204 by chemical mechanical polishing with a slurry having an abrasive such as silica and a chemical reactive solution such as water, the slurry including an oxidation agent for the tungsten, such as hydrogen peroxide, and a buffer)

monitoring a signal representative of current required to rotate the wafer as a measure of a material removal endpoint, (see Appellants' specification curves 640 and 645 of figure 6, paragraphs 30-34; block 720 of figure 7 and paragraph 35, which when summarized, without limitation thereto, for example describe monitoring a current such as using current meter 521 of figure 5, wherein the current is required by motor 520 to drive carrier 516 which rotates substrate 500 on polishing pad 512, and wherein the current is a measure of the endpoint of removal of blanket tungsten layer 310 to form tungsten 114, see figure 4 and paragraph 31, such as indicated by region 630 of figure 6 where a greater current demand than region 610 is required because when layer 310 is polished to form tungsten 114, the coefficient of friction between pad 512 and ILD 204 is greater than the coefficient of friction between pad 512 and layer 310)

wherein the buffer in the slurry is present in an amount sufficient to at least double a differential between a signal measured at a material removal start point and the material removal endpoint relative to a slurry without the buffer. (See Appellants' specification curve 645, region 625 of figure 6, paragraphs 31 and 33-34; and block 730 of figure 7 and paragraph 36, which when summarized, without limitation thereto, for example to describe where a buffer of a weak organic acid/salt pair, such as citric acid and potassium citrate as described at paragraphs 27-29, are present in an amount so that the hydrogen ions generated in the oxidation of the tungsten metal in the CMP process are absorbed, thus removing the localized acidic regions that cause non-uniformities in the polishing of blanket tungsten layer 310, thus contributing to a quick and sharp transition region or clearing time 625 in the CMP of tungsten which provides a more ascertainable change in motor current over a shorter period of time, such as to at least double differential signal 645 between signal 610 measured at a start point or point

during which tungsten layer 310 is being removed and signal 635 at an endpoint at which blanket tungsten 310 has been removed so that the only tungsten in contact with pad 512 is tungsten on the top of via 110. The differential in signal may be as shown by transition region 625 which has at least twice as large a steep slope and differential signal than transition 620 of curve 640 for a slurry without the buffer. Such an increase in endpoint signal increases the reliability of the polished endpoint and reduces the failure rate as noted in paragraph 34 of the application).

Dependent claim 3 describes a method, further comprising buffering with a weak organic acid/salt pair from the group consisting of citric acid/potassium citrate, acetic acid/potassium acetate and ascorbic acid/potassium ascorbate. (See Appellants' specification paragraphs 26-28).

Independent claim 4 describes a composition comprising:

a slurry for chemical mechanical polishing a metal material; an oxidizing agent for the metal material; an abrasive; and (see Appellants' specification features 308, 310, 114 and 116, figures 3-4, paragraphs 6-9; block 710, figure 7, and paragraph 35, which when summarized, without limitation thereto, describe, for example, removing excess tungsten 310 and adhesion layer 308 such that via 110 is flush with ILD layer 204 by chemical mechanical polishing with a slurry having an abrasive such as silica and a chemical reactive solution such as water, the slurry including an oxidation agent for the tungsten, such as hydrogen peroxide, and a buffer).

a buffer present in an amount sufficient to at least double a differential between a signal measured at a material removal start point and the material removal endpoint relative to a slurry without the buffer; wherein the composition is suitable for use in a chemical mechanical polish process. (See Appellants' specification curve 645, region 625 of figure 6, paragraphs 31 and 33-34; and block 730 of figure 7 and paragraph 36, which when summarized, without limitation thereto, for example describe where a buffer of a weak organic acid/salt pair, such as citric acid and potassium citrate as described at paragraphs 27-29, are present in an amount so that the hydrogen ions generated in the

oxidation of the tungsten metal in the CMP process are absorbed, thus removing the localized acidic regions that cause non-uniformities in the polishing of blanket tungsten layer 310, thus contributing to a quick and sharp transition region for clearing time 625 in the CMP of tungsten which provides a more ascertainable change in motor current over a shorter period of time, such as to at least double differential signal 645 between signal 610 measured at a start point or point during which tungsten layer 310 is being removed and signal 635 at an endpoint at which blanket tungsten 310 has been removed so that the only tungsten in contact with pad 512 is tungsten on the top of via 110. The differential in signal may be as shown by transition region 625 which has at least twice as large a steep slope and differential signal than transition 620 of curve 640 for a slurry without the buffer. Such an increase in endpoint signal increases the reliability of the polished endpoint and reduces the failure rate as noted in paragraph 34 of the application).

Independent claim 12 describes a kit comprising:

a slurry for chemical mechanical polishing a metal material; an oxidizing agent for the metal material; an abrasive; and (see Appellants' specification features 308, 310, 114 and 116, figures 3-4, paragraphs 6-9; block 710, figure 7, and paragraph 35, which when summarized, without limitation thereto, describe, for example, removing excess tungsten 310 and adhesion layer 308 such that via 110 is flush with ILD layer 204 by chemical mechanical polishing with a slurry having an abrasive such as silica and a chemical reactive solution such as water, the slurry including an oxidation agent for the tungsten, such as hydrogen peroxide, and a buffer)

a buffer in an amount sufficient to at least double a differential between a signal measured at a material removal start point and the material removal endpoint relative to a slurry without the buffer, wherein the slurry, the oxidizing agent, the abrasive, and the buffer are to be combined into a polish suitable for a chemical mechanical polish operation. (See Appellants' specification curve 645, region 625 of figure 6, paragraphs 31 and 33-34; and block 730 of figure 7 and paragraph 36, which when summarized, without limitation thereto, to describe for example where a buffer of a weak organic

acid/salt pair, such as citric acid and potassium citrate as described at paragraphs 27-29, are present in an amount so that the hydrogen ions generated in the oxidation of the tungsten metal in the CMP process are absorbed, thus removing the localized acidic regions that cause non-uniformities in the polishing of blanket tungsten layer 310, thus contributing to a quick and sharp transition region for clearing time 625 in the CMP of tungsten which provides a more ascertainable change in motor current over a shorter period of time, such as to at least double differential signal 645 between signal 610 measured at a start point or point during which tungsten layer 310 is being removed and signal 635 at an endpoint at which blanket tungsten 310 has been removed so that the only tungsten in contact with pad 512 is tungsten on the top of via 110. The differential in signal may be as shown by transition region 625 which has at least twice as large a steep slope and differential signal than transition 620 of curve 640 for a slurry without the buffer. Such an increase in endpoint signal increases the reliability of the polished endpoint and reduces the failure rate as noted in paragraph 34 of the application).

Dependent claim 16 describes a kit, further comprising a buffer that is a weak organic acid/salt pair from the group consisting of citric acid/potassium citrate, acetic acid/potassium acetate and ascorbic acid/potassium ascorbate. (See Appellants' specification paragraphs 26-28).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The grounds of rejection involved in this appeal are as follows:

Claims 1-8 and 10-17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application No. 2001/0037821 to Staley et al. (Staley).

VII. ARGUMENT

A. Overview of the Prior Art

1. Overview of Staley

Staley teaches a multi-component polishing and/or cleaning composition wherein the components are mixed at the point-of-use or immediately before delivery to the point-of-use (Abstract). Staley describes various components that may or may not be used in embodiments of the polishing and/or cleaning compositions (paragraphs 12-25). Those components include an abrasive, an oxidizing agent, a catalyst, a film forming agent, a complexing agent, a surfactant and a stabilizer (see page 2, paragraph 13 through page 3, paragraph 22). In addition, Staley teaches process sensors to detect changes in polishing or cleaning conditions as the process of CMP proceeds or reaches an endpoint to achieve appropriate polishing depth (see paragraph 39). Specifically, Staley teaches that, for example, sensors can determine the thickness of the substrate or any part thereof (e.g., using radiation, laser, or light-type detection devices), determine a change in the pH of the polishing or cleaning compositions (e.g., by using pH sensors), detect changes in the friction or torque between the polishing pad and the substrate (e.g., be detecting a change in the current flow on the platen or carrier drive motors), and/or detect changes in the electrical conductivity of the substrate (e.g., via electrodes measuring the current flow through the substrate (see paragraph 39). However, Staley does not teach or suggest that there is a causal connection or other link between ingredients of a buffer or an amount of a buffer and changes in the friction or torque between the polishing pad and the surface (see end of paragraph 39).

B. Rejection of Claims 1-8 and 10-17 Under 35 U.S.C. § 103(a)

The Patent Office rejects claims 1-8 and 10-17 under 35 U.S.C. §103(a) as being anticipated by U. S. Patent Publication No. 2001/0037821 to Staley et al. (Staley).

1. Claims 1-8 and 10-17

Appellants respectfully disagree with the rejection above and submit that claims 1-3 (e.g., as claims 2-3 depend from claim 1) are allowable for at least the reason that Staley does not teach or suggest a method including removing material from a surface of a wafer by chemical mechanical polishing the wafer with a slurry comprising an oxidation agent and a buffer wherein the buffer is present in an amount sufficient to at least double a differential between a signal measured at a material removal start point and the material removal endpoint relative to a slurry without the buffer. For example, at least doubling a differential as required by claim 1 provides the benefit of a more ascertainable change in motor current over a shorter period of time such as to increase the reliability of the polished endpoint process and reduce the failure rate for wafer manufacturing as described at paragraph 34 of the Appellants' specification.

Staley teaches a multi-component polishing and/or cleaning composition wherein the components are mixed at the point-of-use or immediately before delivery to the point-of-use (Abstract). Staley describes various components that may or may not be used in embodiments of the polishing and/or cleaning compositions (paragraphs 12-25). Those components include an abrasive, an oxidizing agent, a catalyst, a film forming agent, a complexing agent, a surfactant and a stabilizer (see page 2, paragraph 13 through page 3, paragraph 22. In addition, Staley teaches process sensors to detect changes in polishing or cleaning conditions as the process of CMP proceeds or reaches an endpoint to achieve appropriate polishing depth (see paragraph 39). Specifically, Staley teaches that, for example, sensors can determine the thickness of the substrate or any part thereof (e.g., using radiation, laser, or light-type detection devices), determine a change in the pH of the polishing or cleaning compositions (e.g., by using pH sensors), detect changes in the friction or torque between the polishing pad and the substrate (e.g., be detecting a change in the current flow on the platen or carrier drive motors), and/or detect changes in the electrical conductivity of the substrate (e.g., via electrodes measuring the current flow through the substrate (see paragraph 39).

However, Staley does not teach or suggest that there is a causal connection or other link between ingredients of a buffer or an amount of a buffer and changes in the friction or torque between the polishing pad and the surface (see end of paragraph 39).

On page 2 of the Final Office Action mailed January 30, 2006, the Patent Office pointed to the complexing agents of Staley as inherently having properties of a buffer. Without conceding that such complexing agents have such property, Appellants fail to find any disclosure or motivation in Staley to use complexing agents or any other component in an amount to at least double a differential between a signal measured at a material removal start point and the material removal endpoint relative to a slurry without the buffer. Simply saying that a component of a slurry is a buffer does not motivate or place that component in an amount sufficient to at least double a differential as required by the claim.

Moreover, on page 3 of the Final Office Action, the Patent Office asserts that one skilled in the art would optimize the proportions of the "buffer" (i.e., the complexing agent) through routine experimentation for best results as that optimization would be a result effective variable. However, the Patent Office does not identify either what the "best results" are what the "result effective variables" would be. Specifically, as noted above, Staley makes no link or suggestion of any relationship between the ingredients of a buffer, or an amount of a buffer and the friction or torque between the polishing pad and the substrate. More particularly, there is no teaching or suggestion in Staley that the ingredients of a buffer, or an amount of a buffer is a variable that changes the result of a current required to rotate a wafer at a material removal endpoint or at a material removal start point. Specifically, Staley does not suggest or motivate increasing a differential signal to increase reliability of polished endpoint and/or reduce failure right.

Thus, although the Patent Office points out that Staley teaches that components can exist in the form of a salt, an acid, or as a partial salt, there is no description or suggestion that any single ingredient, or combination of ingredients could or should be

included in a buffer to double a differential signal as claimed. Moreover, there is no description or suggestion that any amount of a single ingredient or a combination of ingredients should be selected to double a differential signal as claimed. For at least the reason that Staley does not disclose, teach, or suggest the above noted limitations of claim 1, Appellants' respectfully request the Board overturn the rejection above for claims 1-3.

Next, the Patent Office's argument that because Staley describes sensors to detect changes in friction or torque, it is obvious to included proper ingredients in a buffer, and to include an amount of the proper ingredients in the buffer sufficient to at least double a differential, as claimed, is also impermissible hindsight because the argument presumes either that Staley teaches an amount of buffer to double a differential, or that Staley teaches a motive of doubling the differential. As the Patent Office points out on pages 3 and 4 in the Final Office Action, these teachings are not in Staley. In other words, the Patent Office's cited teaching of an amount of buffer sufficient to double a differential presumes a motivation to double the differential; and the Patent Office's cited motive to double the differential presumes a teaching of a sufficient amount of an appropriate buffer that can double the differential. However, since neither the motivation, nor the teaching exists in Staley, they can be derived only from Appellants' claims, and are therefore impermissible hindsight. Hence, for at least these additional reasons, Appellants respectfully request the Board overturn the rejection above for claims 1-3.

Appellants also respectfully disagree with the rejection above of claims 4-8 and 10-11 (e.g., as claims 5-8 and 10-11 depend from claim 4), and submits that those claims are allowable over Staley for at least the reason that claims 4-8 and 10-11 relate to a composition including a slurry, an oxidizing agent, an abrasive and a buffer. The buffer is present in an amount sufficient to at least double a differential between a signal measured at a material removal start point and the material removal endpoint relative to a slurry without the buffer. Appellants believe claims 4-8 and 10-11 are not anticipated or rendered obvious over Staley for the reasons stated above with respect to

claims 1-3 that Staley does not teach a buffer present in such sufficient amount as required by claim 4. Hence, Appellants respectfully request the Board overturn the rejection above for claims 4-8 and 10-11.

Next, Appellants disagree with the rejection above of claims 12-17 and submit that claims 12-17 (e.g., as claims 13-17 depend from claim 12) are allowable over Staley for at least the reason that claims 12-17 relate to a kit. The kit includes, among other things, a slurry, an oxidizing agent, an abrasive and a buffer in an amount sufficient to at least double a differential between a signal measured at a material removal start point and the material removal endpoint relative to a slurry without the buffer. As noted above with respect to claims 1-3, Staley does not teach or provide any motivation for a buffer in such sufficient amount as required by claim 12. Hence, Appellants respectfully request the Board overturn the rejection above for claims 12-17.

2. Dependent Claims 3 and 16

In addition to the reasons above for claim 1, Appellants respectfully disagree with the rejection above and submit that dependent claim 3 (as dependent claim 3 depends from claim 1) is allowable for at least the reason that Staley does not teach or suggest buffering with a weak organic acid/salt pair from the group consisting of citric acid/potassium citrate, acetic acid/potassium acetate and ascorbic acid/potassium ascorbate, as required by claim 3. In fact, in the last paragraph of page 3 of the current Office Action, the Patent Office notes that Staley does not specifically teach that the buffer is an organic acid/salt pair. Moreover, the Patent Office has not identified any description or motivation in Staley for an organic acid/salt pair that is present in an amount to double a differential between a signal measured at a material removal start point and a material removal end point, as required by the claim 3. In addition, the Patent Office has not identified and Appellants are unable to find any teaching or suggestion in Staley of using potassium citrate, potassium acetate, asorbic acid, or potassium ascorbate in a buffer. Hence, for this additional reason, Appellants respectfully request the Board overturn the rejection above of claim 3.

In addition to the reasons above for claim 1, Appellants respectfully disagree with the rejection above and submit that dependent claim 16 (as dependent claim 16 depends from claim 12) is allowable for at least the reason that Staley does not teach or suggest buffering with a weak organic acid/salt pair from the group consisting of citric acid/potassium citrate, acetic acid/potassium acetate and ascorbic acid/potassium ascorbate, as required by claim 16. An argument analogous to the one above for claim 3 applies here as well. For instance, as noted above for claim 3, the Patent Office has not identified and Appellants are unable to find any teaching or suggestion in Staley of using potassium citrate, potassium acetate, asorbic acid, or potassium ascorbate in a buffer. Hence, for this additional reason, Appellants respectfully request the Board overturn the rejection above of claim 16.

Hence, Appellant respectively requests the Board overturn the rejection of claims 1-8 and 10-17 as being unpatentable, for at least the reasons noted above.

Respectfully submitted,
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN

Dated: July 17 2006 By: _____
Angelo J. Gaz, Reg. No. 45,907

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CERTIFICATE OF MAILING:

I hereby certify that this correspondence is being deposited as First Class Mail, with the United States Postal Service in an envelope with sufficient postage addressed to: Mail Stop Appeal Brief-Patents, Commissioner for Patents, P.O. Box 1450, Virginia, VA 22313-1450.

Amber D. Saunders 7/17/06
Amber D. Saunders Date

VIII. CLAIMS APPENDIX

The claims involved in this Appeal are as follows:

1. (Previously Presented) A method comprising:

removing a material from a surface of a wafer by chemical mechanical polishing the wafer with a slurry comprising an oxidation agent for the material and a buffer; and

monitoring a signal representative of current required to rotate the wafer as a measure of a material removal endpoint,

wherein the buffer in the slurry is present in an amount sufficient to at least double a differential between a signal measured at a material removal start point and the material removal endpoint relative to a slurry without the buffer.

2. (Original) The method of Claim 1, further comprising:

buffering with a weak organic acid/salt pair.

3. (Original) The method of Claim 2, further comprising:

buffering with a weak organic acid/salt from the group consisting of citric acid/potassium citrate, acetic acid/potassium acetate and ascorbic acid/potassium ascorbate.

4. (Previously Presented) A composition comprising:

a slurry for chemical mechanical polishing a metal material;

an oxidizing agent for the metal material;

an abrasive; and

a buffer present in an amount sufficient to at least double a differential between a signal measured at a material removal start point and the material removal endpoint relative to a slurry without the buffer;

wherein the composition is suitable for use in a chemical mechanical polish process.

5. (Original) The composition of Claim 4, wherein the oxidizing agent is hydrogen peroxide.

6. (Original) The composition of Claim 4, wherein the buffer is a weak organic acid/salt pair.

7. (Original) The composition of Claim 6, wherein the weak organic acid comprises one of the group consisting of citric acid/potassium citrate, acetic acid/potassium acetate and ascorbic acid/potassium ascorbate.

8. (Previously Presented) The composition of Claim 4, wherein the metal material comprises one of the group consisting of tungsten and titanium nitride.

9. (Canceled)

10. (Original) The composition of Claim 4, wherein the abrasive comprises one of the group consisting of silica and alumina.

11. (Previously Presented) The composition of Claim 4, wherein the endpoint signal of the composition is enhanced over an endpoint signal of a composition comprising a slurry, an oxidizing agent, and an abrasive and without a buffer by at least a factor of two.

12. (Previously Presented) A kit comprising:
a slurry for chemical mechanical polishing a metal material;
an oxidizing agent for the metal material;
an abrasive; and

a buffer in an amount sufficient to at least double a differential between a signal measured at a material removal start point and the material removal endpoint relative to a slurry without the buffer,

wherein the slurry, the oxidizing agent, the abrasive, and the buffer are to be combined into a polish suitable for a chemical mechanical polish operation.

13. (Previously Presented) The kit of Claim 12, wherein the metal material comprises one of the group consisting of tungsten and tantalum nitride.

14. (Original) The kit of Claim 12, wherein the abrasive comprises one of the group consisting of silica or alumina.

15. (Original) The kit of Claim 12, wherein the buffer is an organic acid/salt pair.

16. (Original) The kit of Claim 15, wherein the organic acid comprises one of the group consisting of citric acid/potassium citrate, acetic acid/potassium acetate and ascorbic acid/potassium ascorbate.

17. (Previously Presented) The kit of Claim 12, wherein the endpoint signal of the polish is enhanced over the endpoint signal of a polish comprising a slurry, an oxidizing agent, and an abrasive and without a buffer by at least a factor of two.

IX. EVIDENCE APPENDIX

No evidence is submitted with this appeal.

X. RELATED PROCEEDINGS APPENDIX

No related proceedings exist.